

Notice of Allowability

Application No.

09/869,493

Examiner

Justin Michalski

Applicant(s)

HOOVER, ALAN ANDERSON

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 18 February 2005.
2. ☒ The allowed claim(s) is/are 9-18, they have been renumbered 1-10.
3. ☒ The drawings filed on 28 June 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input checked="" type="checkbox"/> Other <u>Replacement Fig. 5</u> . |

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Reitseng Lin on 21 April 2005.

The application has been amended as follows:

Please **replace** the paragraph beginning at page 6, line 18 with the following **rewritten** paragraph:

Passive resistors 35, 37, 39, and capacitors 36, 38, 40 alter the spectral response of the buffered (L+R) signal, as discussed above in connection with Fig. 3 and shown in Fig. 4. When transistor 32 is placed in a non-conducting state, passive components resistors 35, 37, 39, and capacitors 36, 38, 40 have no effect on the buffered (L+R) signal and opamp 42 functions as a non-inverting amplifier with a gain set by resistors $(46+52)/52$, or approximately 2:1. The transistor 32 is an example of a first switch, and the resistors 46 and 52 are examples of first and fourth impedance networks, respectively. The network formed by the resistors 37, 39, and capacitors 38, 40 is an example of a second impedance network. The network formed by the resistor 35 and the capacitor 36 is an example of a third impedance network.

Please **replace** the paragraph beginning at page 6, line 27 with the following **rewritten** paragraph:

The right channel input is coupled through resistors 2R to an inverting input of opamp 54 to become -R at the output. Lin and -Rin are summed by respective further resistors 3R to form the (L-R) signal

at node 63 and noninverting input of opamp 56. Opamp 56 is a noninverting gain amplifier when an expansion function, which will be discussed herein below, is "off" because resistors 60, 64 and capacitors 58, 62 are effectively out of the circuit when transistor 66 is cut-off with its base connected to -V by selector switch 68 through resistor 34a. The same discussion above in connection with switch 68 and transistor 32 are applicable hereat when transistor 66 goes into saturation and components 58, 60, 62 and 64 come into play. The transistor 66 is an example of a third switch, the network formed by the resistor 64 and the capacitor 62 is an example of a sixth impedance network, and the network formed by the capacitor 58 and the resistor 60 is an example of the seventh impedance network.

Please **replace** the paragraph beginning at page 6, line 37 with the following **rewritten** paragraph:

For the following discussion, boost transistor 70 is assumed to be in the off state, with boost switch 72 connected to an appropriate negative voltage by being placed in the "out" position. Transistors 32 and 66 are placed into a saturated state by placing switch 68 to the "in" position. Since the collector of transistor 66 is effectively grounded in this condition, the node which connects the collector of transistor 66 is effectively grounded. The transistor 70 is an example of a fourth switch, and resistor 78 is an example of an eighth impedance network.

Please **replace** the paragraph beginning at page 7, line 3 with the following **rewritten** paragraph:

Transistors 70 and 71 provide an expansion "boost", when transistors 70, 71 are placed into saturation by boost switch 72 via base resistors 82, 82a, an additional gain boost is placed in the feedback loop of opamps 56, 42 by placing respective resistors 77, 75 in series with resistors 74, 46, with both in parallel with respective resistors 78, 52. The boost of the (L+R) signal and the (L-R) signal may or may not be the same. Thus, this can provide a few more dB of gain to the (L-R) signal path with respect to the (L+R) signal path for providing the desired amount of expansion effect. The transistor 71 is an example of

a second switch, and the resistor 74 is an example of a fifth impedance network.

Please **replace** the paragraph beginning at page 7, line 13 with the following **rewritten** paragraph:

Feedback resistors 77 and 74 have preferred values of 1K and 100K, respectively. At very low audio frequencies, the gain of opamp 56 is set by resistors 77 and 74 in series, and resistor 78, because the reactance of capacitor 62 is very high. The gain is approximately two (6dB) at low audio frequencies, A similar operation applies to opamp 42 in connection with resistors 75, 46, capacitor 38, and transistor 71.

Please **replace** the paragraph beginning at page 7, line 19 with the following **rewritten** paragraph:

The reactance of capacitor 62 (preferably 0.056uF) is 100K ohms at a frequency of approximately 28 Hz. At this breakpoint frequency, the reactance of capacitor 62 equals the sum of resistors 77 and 74. The gain of opamp 56 starts to rise. The opamp 56 gain rises until the reactance of capacitor 62 equals the resistance of resistor 64 (24K). The gain of opamp 56 is now the impedance of capacitor 62 plus resistor 64, in parallel with resistor 78 plus resistors 74 + 77 divided by the previous quantity. At the frequency of 120 Hz, the gain stops rising and levels off at a gain of about 16dB minus the input attenuation of 6dB.

Please **replace** the paragraph beginning at page 8, line 6 with the following **rewritten** paragraph:

The (L-R) signal at node 73 is added to the (L+R) signal at node 79 through respective resistors 4R for producing the L signal at node 80. The (L-R) signal at node 73 is amplified by opamp 84 which according to the $5(2)R$ (a value of 2 times R) feedback resistor to resistor 5R provides an amplification of two, which when added through its resistor 6R to (L+R) through resistor 6R provides the R signal at node 76.

Please **replace** the paragraph beginning at page 8, line 23 with the following **rewritten** paragraph:

Optimization can be accomplished by listening to a variety of program material to determine that: (1) A significant amount of expansion is heard for most stereo program material, both music and movie, and (2) There is no excessive masking of spoken/sung vocals. This usually means that the amount of the expansion (L-R) signal is larger by between 3 and 10 dB. This can be accomplished by increasing the gain of the opamps 56, 84 in the (L-R) signal path. For item (2) above, treble boost of the (L+R) signal restores lost sibilants resulting in greater intelligibility.

The following changes to the drawings have been approved by the examiner and agreed upon by applicant:

The attached sheet of drawing includes changes to Fig. 5. In Fig. 5, the reference numeral for the resistor connected to the base of the transistor 71 has been changed to 82a, the reference numeral for the resistor connecting the output of the opamp 42 to a terminal of the resistor 46 has been changed to 75, the reference numeral for the resistor connecting the output of the opamp 56 to a terminal of the resistor 74 has been changed to 77, the reference numeral for the node at the output of the opamp 42 has been changed to 79, and the reference numeral of the opamp 74 has been changed to 84.

Fig. 5 has been replaced by attached Fig. 5.

Allowable Subject Matter

Claims 9-18 are allowed. They have been renumbered 1-10.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: According to applicant's remarks filed 16 February 2005.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (571)272-7524. The examiner can normally be reached on M-F 7-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM



SINH TRAN
SUPERVISORY PATENT EXAMINER

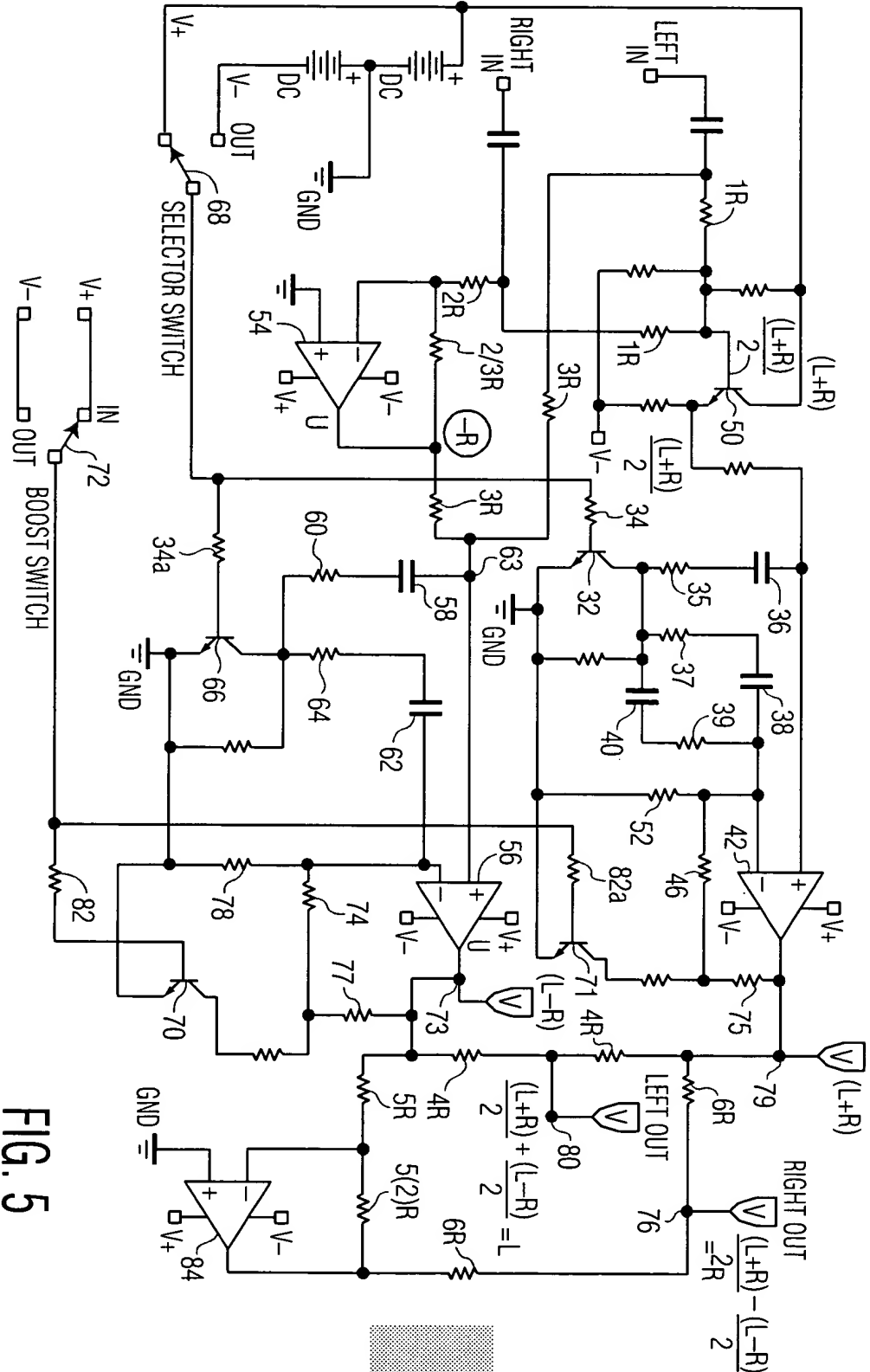


FIG. 5